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Chronoamperometric determination of synthetic phenolic antioxidants in Brij® 35 micellar medium

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Abstract

© 2015, Pleiades Publishing, Ltd. tert-Butylhydroquinone (TBHQ) and tert-butylhydroxyanisole (BHA) are oxidized on a glassy carbon electrode modified with multiwalled carbon nanotubes in a 0.1 M LiClO4 supporting electrolyte in the medium of 1 mM Brij®35 at 0.27 and 0.47 V, respectively. A method for their chronoamperometric determination is developed. It is shown that a steady-state electrolysis is achieved within 100 s. The analytical range is 2.50–1000 μM for TBHQ and 1.50–100 and 250–1000 μM for BHA with the detection limits (S/N = 3) 0.64 and 0.38 μM, respectively. The relative standard deviation in the determination of TBHQ and BHA in model solutions does not exceed 6%. The method was tested on micellar extracts of linseed oils. The accuracy measure is 100 ± 1%, which points to the absence of matrix effects in the determination of TBHQ and BHA.

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Keywords

chronoamperometry, micellar media, sterically hindered phenols, surfactants